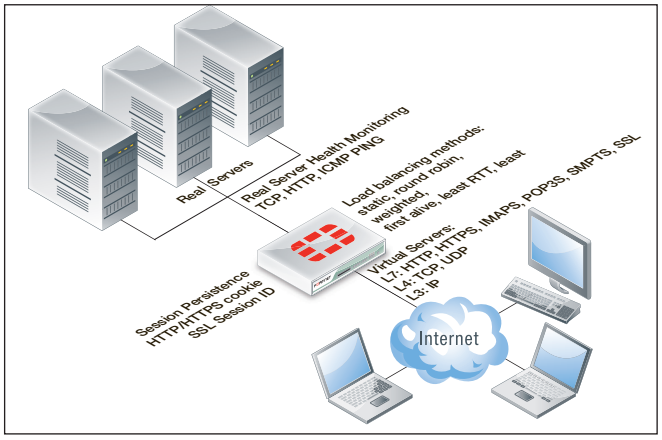
Load Balancing

Load balancing distributes workloads across multiple network devices, allowing simultaneous requests to be handled quickly and reliably.

Load Balancing combined with Unified Threat Management

By introducing comprehensive load balancing functionality to our UTM solution Fortinet have taken UTM protection to a whole new level. FortiGate units combine multiple security functions such as firewall, VPN, application control, antivirus, intrusion prevention, web filtering, and DLP into a single appliance. Our comprehensive load balancing functionality brings consolidation to a whole new level. Rather than going to the expense of deploying multiple solutions to protect your server farm, you can combine firewalling, application control, IPS, and load balancing into a single FortiGate unit or cluster.



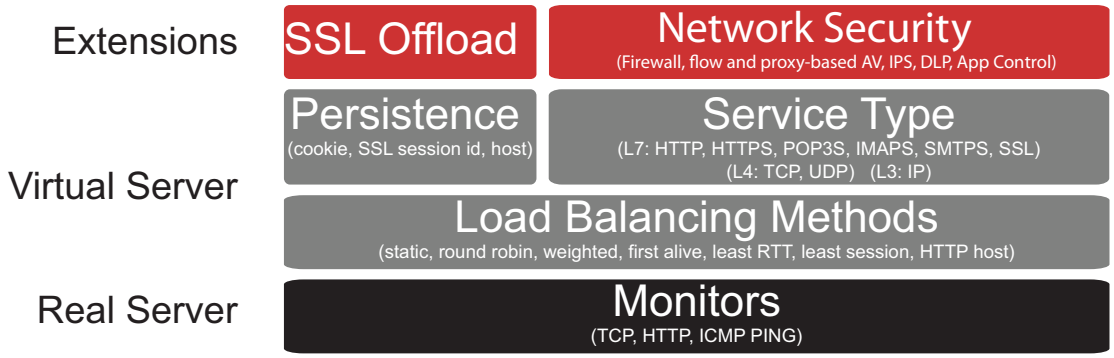
The benefit of consolidation is not only limited to cost. Consolidating multiple security functions onto a single appliance can result in:

Increased Resilience	A consolidated solution results in significantly simplified network architecture. High availability can be provided for all technologies with just a pair of devices rather than several.
Reduced Operational Overheads	A unified management solution consisting of a single GUI, logging and reporting, SNMP monitoring and other management functions will significantly reduce the resources required to manage the multiple technology areas. A consolidated solution provides a single point of contact for support and renewals rather than having to deal with multiple vendors.

Load balancing feature set

The FortiOS load balancing feature set contains all of the features you would expect of a server load balancing solution. Traffic can be balanced across multiple backend servers based on multiple load balancing schedules including static (failover), round robin, weighted to account for different sized servers, or based on the health and performance of the server including round trip time and number of connections.

The load balancer supports HTTP, HTTPS, IMAPS, POP3S, SMTPS, SSL, or generic TCP/UDP or IP protocols. Session persistence is supported based on the SSL session ID, based on an injected HTTP cookie, or based on the HTTP host. Load balancing is supported on most FortiGate devices and includes up to 10,000 virtual servers on our high end systems.



SSL offloading

With more and more critical business applications being made available online and in the cloud, the demand for secure remote continues to increase. Whilst securing web and email applications with SSL is essential, this protection adds significant performance overheads. An SSL protected application running on a standard server will perform all the costly encryption/decryption and key exchange routines in software which uses vital CPU resources that should be available for running the application. The consequence of this is that many more or more powerful servers are required to deliver the application.

FortiGate SSL offloading is designed with the explosion of SSL applications in mind. The key exchange and encryption/decryption tasks are offloaded to the FortiGate unit where they are accelerated using FortiASIC technology providing significantly more performance than a standard server or load balancer could handle. This frees up valuable resources on the server farm which can be used to run a more responsive business.

SSL content inspection

Traditionally, SSL encrypted application data would be invisible to any border gateway filtering solution. This is because the encryption process prevents the payload of any connection from being seen other than by the communicating systems. The FortiGate SSL Offload feature allows the application payload to be inspected before it reaches your servers; preventing intrusion attempts, blocking viruses, stopping unwanted applications, and preventing data leakage.

Health Check

Health checking can be enabled to prevent load balancing traffic from being sent to a non-functioning real server. Real server health can be monitored using ICMP ping or more sophisticated TCP testing. The most comprehensive test is HTTP which verifies that the HTTP application is responding and that it is returning the correct content.

Health checking removes real servers from the load balancing cluster which are returning invalid content. The removal of real servers from the clusters is based on the Interval, Timeout and Retry Settings:

Interval	How often to test the server.
Timeout	What maximum response time is permissible before a server is treated as non-functional.
Retry	How many failures before the server is considered “dead” and removed from the cluster.

Server Monitoring and Management

The health and performance of real servers can be monitored from the FortiGate GUI. Virtual servers and their assigned real servers can be monitored for health status, if there have been any monitor events, number of active sessions, round trip time and number of bytes processed. Should a server become problematic and require administration, it can be gracefully removed from the Real Server pool to enable disruption free maintenance. When a removed real server is able to operate it can gracefully be added back to the virtual server.

HTTP Multiplexing

A performance saving feature of HTTP/1.1 compliant web servers is the ability to pipeline requests on the same connection. This allows a single HTTPD process on the server to interleave and server multiple requests. HTTP multiplexing reduces the number idle sessions, too many of which can exhaust the resources on a server. The Fortinet solution has the ability to take multiple separate inbound sessions and multiplex them over the same internal session. This reduces the load on the backend server and increases the overall performance.